DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, DC 20314-1000

EM 1110-2-1604

CECW-EH-D

Manual
No. 1110-2-1604

30 June 1995

Engineering and Design
HYDRAULIC DESIGN OF NAVIGATION LOCKS

1-1. Purpose. This manual presents the results of research, design studies, and operation experience as guidance for the hydraulic design of navigation locks.

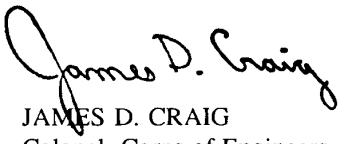
1-2. Applicability. This manual applies to all HQUSACE elements, major subordinate commands, districts, laboratories, and field operating activities having responsibilities for the design of civil works projects.

1-3. General. The guidance is limited to lock types that are considered design options by the U.S. Army Corps of Engineers (CE). Other designs, such as mechanical lifts and water slopes occasionally used in Europe, are discussed in Appendix G, but not in detail since they have not been feasible options for waterways within the United States. Detailed theory, computer programming, and computer codes are not presented; however, sources of these types of information are noted. The site, structure, hydraulic system, and operation of most existing CE lock configurations are summarized. Laboratory and field studies and other information data sources pertinent to these locks are identified. The overall broad scope of materials specifically addresses the following two design circumstances.

a. Existing locks. General information concerning hydraulic factors that tend toward safe, efficient, and reliable lock performance is directed toward repair or rehabilitation of existing locks. Many existing locks are not current state-of-the-art designs; design guidance for obsolete systems is not presented.

b. New locks. Detailed information regarding state-of-the-art hydraulic systems is directed toward new or replacement locks. General information regarding parameters used as the basis for design as well as specific information regarding function, structure, performance, and operation of modern locks is included.

FOR THE COMMANDER:



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This manual supersedes EM 1110-2-1604, dated 1 April 1956.